Wavelength tunable filter

A defect layer of PMN-PT (EO material) in the middle of alternating high & low index layers (each quarter wavelength thick) guides light in to central wavelength (1550nm) of the bandgap of this 1D structure. A change in the refractive index of PMN-PT shifts the transmission peak to other wavelengths. A minimum refractive index change tunes 0.8nm spaced channels and maximum change cover C-band (1530-1565nm).

Electro optic switch

Without Electric Field (isotropic PMN-PT)
No hybrid bandgap

With Electric Field (anisotropic PMN-PT)
Hybrid bandgap